

# C1.5 Ordering

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_ **Total: 20 marks**

**KEY WORDS** fraction 分数 • mixed number 带分数 • decimal 小数 • denominator 分母  
• integer 整数

## Objective

Use ordering to solve Core IGCSE Mathematics problems.

**You must be able to:**

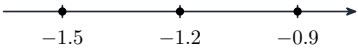
- Order signed numbers and unlike numerical forms
- Use comparison symbols including equality
- Interpret thresholds in a real context

## 1 Key knowledge and worked examples

■ **Key knowledge: Ordering**

To order numbers, compare them in the same form. A number further right on a number line is greater. For negative numbers, a larger size can mean a smaller value:  $-8 < -3$ .  $\leq$  and  $\geq$  include equality;  $<$  and  $>$  do not.  $\neq$  means not equal.

■ **Worked example: Ordering**



Order  $-1.2$ ,  $-1\frac{1}{2}$ ,  $-0.9$  from smallest to largest.

- Convert the mixed number:  $-1\frac{1}{2} = -1.5$ .
- Compare positions:  $-1.5 < -1.2 < -0.9$ .
- For positive fractions, compare common denominators:  $2/3 = 8/12 < 9/12 = 3/4$ .

■ **Method check**

Compare values rather than the number of written digits. For negative numbers, the value closer to zero is greater.

## 2 Practice

**2.1** Order  $-7, 2, -3, 0$  from smallest to largest. [2]

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**2.2** Insert  $<$ ,  $>$  or  $=$  between  $3/5$  and  $0.62$ . [2]

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**2.3** Order  $0.48, 45\%, 1/2$  from smallest to largest. [2]

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**2.4** Write all integers satisfying  $-2 \leq x < 3$ . [2]

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## 3 Exam-style questions

**3.1** Apply the ordering methods below. Show working and include units where appropriate.

(a) Order the race times  $12.08, 12.8, 12.18$  s from fastest to slowest. [2]

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(b) A qualifying time must be at most  $12.18$  s. Write this condition using a symbol. [2]

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(c) Which of these runners qualify? Explain why equality matters. [2]

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**3.2** Four freezer readings are  $-2.05, -2.5, -2.15, -2.005$  °C. The acceptable range is  $-2.5 \leq T \leq -2.05$ .

(a) Order the readings from coldest to warmest and identify the warmest reading. [3]

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(b) State which readings are acceptable and explain whether  $-2.5$  °C is included. [3]

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## Solutions

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Award method and answer marks as indicated; accept equivalent correct methods.

### 2.1

- Left to right on the number line:  $-7, -3, 0, 2$ .

### 2.2

- $3/5 = 0.60$ , so  $3/5 < 0.62$ .

### 2.3

- Convert to decimals 0.48, 0.45, 0.50: 45%, 0.48,  $1/2$ .

### 2.4

- Include  $-2$  but exclude 3:  $-2, -1, 0, 1, 2$ .

### 3.1

(a)

- Smaller time is faster: **12.08 s, 12.18 s, 12.8 s**.

(b)

- At most includes the boundary:  $t \leq 12.18$  (time in seconds).

(c)

- **The 12.08 s and 12.18 s runners qualify;**  $\leq$  includes the exact limit.

### 3.2

(a)

- Use equal decimal places to compare.
- Coldest to warmest:  **$-2.5$ ,  $-2.15$ ,  $-2.05$ ,  $-2.005$  °C**.
- The warmest is  **$-2.005$  °C**, nearest to zero.

(b)

- Accept  **$-2.5$ ,  $-2.15$  and  $-2.05$  °C**.
- Reject  **$-2.005$  °C**, which is greater than  $-2.05$  °C.
- The lower endpoint  $-2.5$  °C is included because the symbol is  $\leq$ .